

Medium Voltage Cables



Transmission & Distribution



Keystone Cable is a Leading Singapore-based Cable Manufacturer and Supplier

Established since 1990, Keystone Cable has an unwavering commitment to producing cables of the highest quality. Keystone Cable has obtained all necessary certificates from TÜV SÜD PSB. In addition, we are ISO 9001, 14001 and OHSAS 18001 accredited for our Quality, Environment and Safety Management Systems.

With our emphasis on stringent quality control processes, we provide our customers with a guarantee of product excellence and reliability. Since 2005, we have been supplying medium voltage cables to SP Group in Singapore as well as to various projects in Africa, Australia, Hong Kong, Indonesia, Maldives, Mauritius, Mongolia, Myanmar, Philippines and Sri Lanka.





Keystone Cable **Business Solutions**

INDUSTRIES



Transmission
& Distribution



Communication



Sustainable Energy



Infrastructure



Building



Industrial

This catalogue showcases our range of cables used in the Power Distribution Industry. These cables are designed, manufactured, and tested in accordance to international standards.

For more information on our offerings in other industries, please visit our website:

www.keystone-cable.com

Contents

Rated Voltage of Medium Voltage Cables	2
Characteristics of XLPE Insulated Cables	3
Testing & Standards	4
Cable Construction and Production Process	5
Overview of Pilot Cables	6
Products	
Medium Voltage Cables	
3.6/6(7.2)kV Medium Voltage Cables	
Single-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	8
Single-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	9
3-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	10
3-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	11
6/10(12)kV Medium Voltage Cables	
Single-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	12
Single-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	13
3-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	14
3-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	15
8.7/15(17.5)kV Medium Voltage Cables	
Single-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	16
Single-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	17
3-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	18
3-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	19
12/20(24)kV Medium Voltage Cables	
Single-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	20
Single-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	21
3-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	22
3-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	23
18/30(36)kV Medium Voltage Cables	
Single-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	24
Single-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	25
3-Core, Cu Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	26
3-Core, Al Conductor, XLPE Insulated, Unarmoured & Armoured, PVC Sheathed	27
Pilot Cables	
0.6/1(1.2)kV Pilot Cables	
Multi-Pair, Cu Conductor, PE Insulated, DSTA Armoured, PVC Sheathed	29
Multi-Pair, Cu Conductor, XLPE Insulated, SWA Armoured, PVC Sheathed	30
Technical Data	31
Ordering Parameters	48

Rated Voltage of Medium Voltage Cables

The rated voltage of the cable for a given application shall be suitable for the operating conditions in the system in which the cable is used.

- U_0/U (U_m) - Cable rated voltage which applies to system voltage and operating condition of the cable
- U_0 - the rated power frequency voltage between conductor and earth or metallic screen
- U - the rated power frequency voltage between conductors
- U_m - the maximum value of the "highest system voltage" for which the equipment may be used

To facilitate the selection of the cable, systems are divided into three categories:

- Category A: Systems which any phase conductor that comes in contact with earth or an earth conductor is disconnected from the system with 1 min.
- Category B: Systems which, under fault conditions, will operate for a short period with one phase earthed. This period, according IEC60183, should not exceed 1 h. For cables that are covered, this period should not exceed 8 h.
- Category C: Systems that do not fall into Category A or B.

The following table provides the maximum permissible operating voltage relative to each rated voltage (U_0/U).

Highest system voltage (U_m) (kV)	Rated voltage (U_0/U)	
	IEC 60502-2	BS 6622, BS 7835
	(kV)	
7.2	3.6/6	3.8/6.6
12	6/10	6.35/11
17.5	8.7/15	8.7/15
24	12/20	12.7/22
36	18/30	19/33

Characteristics of XLPE-Insulated Cables

XLPE-Insulated Cables

Cross-linked polyethylene (XLPE) insulated power cable offers various advantages compared with conventional paper insulated oil-filled cable. XLPE cable is lighter in weight, has more flexibility, and does not require an oil supplying system, hence requires less maintenance. In addition it boasts smaller charging current and dielectric loss. XLPE cable also has excellent thermal properties which improves performance in continuous and short circuit current carrying capacity. Based on these features, XLPE cable is used in up to 500kV extra-high voltage line.

Characteristics of XLPE Insulated Cable

Polyethylene (PE) is superior in electrical characteristics and chemical resistance, however it faces a thermal instability issue and starts to melt when it reaches a temperature of 110°C.

Cross-linked polyethylene (XLPE), which is the result of a molecular bonding chemical process called "cross-linking", solves this melting issue.

The molecular structure of cross-linked polyethylene allows excellent ozone resistance as well as outstanding stability and resistance to heat. The mainstream process of "cross-linking" is to blend peroxide (e.g. dicumyl peroxide) into polyethylene and extrude it around the conductor, and heat it up to a high temperature sufficient to achieve the peroxidation.

Comparison of Characteristics between "Cross-linked Polyethylene" and "Pure Polyethylene"

Item	Material	
	Cross-linked polyethylene	Pure polyethylene
Specific gravity	0.92	0.92
Dielectric strength, kV/mm	35-50	35-50
Volume resistivity, Ω-cm	10 ¹⁸	10 ¹⁸
Dielectric constant	2.3	2.3
Power factor, %	0.03	0.03
Tensile strength, kg/mm ²	1.2-1.5	1.2-1.5
Elongation, %	500-600	500-700
Max. operating temperature, °C	90	75
Max. short circuit temperature °C	250	150
Heat deformation	G	F
Ozone resistivity	G	G
Water resistance	F	F
Oil resistivity	E	E

*Note: E - Excellent, G - Good, F - Fair

Cable Testing:

All cables will go through the relevant tests in accordance to IEC60502-2 before delivery

Routine Tests:

Routine tests are carried out on each finished length of cable to overall quality of the cable. They comprise of:

1. Measurement of conductor resistance
2. Partial discharge test
3. High voltage test

Sample Tests:

1. Conductor examination
2. Check of dimensions
3. Voltage test for cables of rated voltage above 6.6/6(7.2)kV
4. Hot set test for XLPE insulation

Type Tests:

1. Electrical type test
2. Non-electrical type test

Main Applicable Standards

Standards	Description
IEC60502-2	Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1.2$ kV) up to 30 kV ($U_m = 36$ kV) – Part 2: Cables for rated voltages from 6 kV ($U_m = 7.2$ kV) up to 30 kV ($U_m = 36$ kV)
IEC60228	Conductors of insulated cables
IEC 60840	Power cables with extruded insulation and their accessories for rated voltages above 30 kV ($U_m = 36$ kV) up to 150 kV ($U_m = 170$ kV)
BS 6622	Electric cables – Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6 kV to 19/33 kV
BS 7835	Electric cables – Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6 kV to 19/33 kV having low emission of smoke and corrosive gases when affected by fire
ICEA S-66-524	Cross-Linked Polyethylene Wire and Cable for the Transmission and Distribution of Electrical Energy
ICEA S-93-639	5-46kV Shielded Power Cable for Use in the Transmission and Distribution of Electrical Energy
UL 1072	Medium-Voltage Power Cables
IEC 60811	Electric and optical fibre cables – Test methods for non-metallic materials
IEC 60332	Tests on electric and optical fibre cables under fire conditions
IEC 60331-21	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0.6/1.0 kV
IEC 61034	Measurement of smoke density of cables burning under defined conditions
IEC 60754	Test on gases evolved during combustion of materials from cables

*Note: Low Smoke Zero Halogen cables comply with IEC61034 and IEC60754
Fire resistant cables comply with IEC60331-21
Flame retardant cables comply with IEC60332

Copper Rod/Aluminium Rod

Copper rod of diameter of 8.0 mm, made from electrolytic copper, with copper purity higher than 99.95%. Aluminium rod of diameter of 9.5 mm, drawn from aluminium ingots with minimum aluminium purity requirement of 99.70%.

Drawing/Annealing for copper wire: hard drawn for aluminium wire

A variety of required copper wire sizes are drawn from the copper rod, and treated at specified temperatures to restore ductility to the copper, making it soft and flexible. The heat treatment process is known as annealing and the resulting metal is known as soft annealed copper.

Hard drawn: A variety of required aluminium wire sizes are hard-drawn from aluminium rod. As a result, the strength of the wire is increased, and it has a better surface finish.

Stranding

The conductor consists of annealed copper or aluminum wires. Usually conductors up to 1000sqmm will be circular compacted stranded and shall comply with the requirement of IEC 60228 Class 2.

Triple extrusion process: conductor screen/ insulation/ insulation screen

The three layers are extruded in one step using state-of-the-art Catenary Continuous Vulcanization (CCV) technology with advanced automatic concentricity control system which guarantees the highest quality of the insulated conductor.

- **Conductor screen (Stress control layer)**

A cross linked semi-conducting compound is extruded over the metallic conductor. This semi-conductive layer acts as a stress control layer as it smooths out any irregularities that could cause protrusions into the insulation. Such protrusions into the insulation increases the localized stress that may weaken the long-term breakdown strength of the insulation.

- **Insulation**

Each core conductor is insulated by extruding cross-linked low density polyethylene. This insulating compound is specially developed for the CCV technology.

- **Insulation Screen (Stress relief layer)**

A cross linked semi-conducting compound is extruded over the insulation. This layer, which has a very smooth surface, serves as a transition material between the insulation where electric field exists and the conductive metallic screen, where the electric field is zero. This helps to reduce the stress at the insulation layer. This insulation screen layer could be bonded to the insulation or is a strippable type for easy removal to facilitate splicing and terminating works.

Metallic screen

The metallic screen usually consists of a layer of copper tape, applied helically with an overlap, over the insulation screen. The metallic screens in a three-core cable are in contact with each other.

Cable assembly (optional)

For a three-core cable, the screened cores will have identification tapes (Brown, Black, Grey) under the metallic screen, before the cores are laid up. A non-hygroscopic polypropylene filler is applied between the laid up cores to provide a circular shape to the overall cable. Polypropylene tape(s) or PETP (Polyester) tape(s) is used as a barrier tape over the laid up cores.

Separation sheath (optional)

All armoured cables have an extruded layer of Black PVC, MDPE or LSZH separation sheath, applied over the core or laid-up cores to separate the different metals to prevent the corrosion of metal due to galvanic effect.

Armour (optional)

In the case of armoured cables, the armour is applied over a separation sheath which is used to provide additional mechanical protection. For single-core cables, the armour consists of a layer of Aluminium wires, double Aluminium tape or other non-magnetic armour, and for multi-core cables, the armour consists of a layer of galvanized steel wires, or double galvanized tape.

Outer sheath extrusion

All cables have an extruded layer of PVC, MDPE or LSZH outer sheath over the core, laid-up core or the armour. This outersheath has anti-termite properties and also protects the cable from sunlight and other. The outer sheath is normally black but another color may be provided upon agreement between the manufacturer and the purchaser.

Inspection

Packing

Overview on Pilot Cables

Pilot cables are also known as auxiliary cables which serve two purposes:

- (a) the interconnection of protection, control and communication systems within a substation;
- (b) the interconnection of protection, intertripping and communications systems between substations.

Advantages of Pilot Cables:

Pilot cables are designed to protect the cable cores from the danger of induced voltages coming from other cable circuits laid in close proximity.

It protects the system from dangerous induced voltages and EMC problems by means of providing specific shields which are designed to suit the operating conditions. The screen restricts the over voltage on the cable cores.

We manufacture a broad range of pilot cables covering both 5kV and 15kV (common stock) levels of induced voltages and provide customers with customizable alternatives.



Medium Voltage Cables

1	Conductor	Circular compacted stranded CU/AL
2	Conductor screen	Cross linked semi-conducting compound
3	Insulation	XLPE
4	Insulation screen	Cross linked semi-conducting compound
5	Metallic screen	Copper tape
6	Filler	Non-hygroscopic PP filler
7	Binder tape	Non-hygroscopic tape
8	Separation sheath	PVC*
9	SWA	Galvanized steel wire**
10	DSTA	Galvanized steel tape***
11	Outer sheath	PVC*

*MDPE, LSZH material is available if required

**AWA: Aluminium wire for single-core cable

***DATA: Double aluminium tape for single-core cable

Medium Voltage Cables

3.6/6(7.2)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/AWA/PVC-AT or CU/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	3.6/6(7.2)kV, 3.8/6.6(7.2)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	2.5	13019015	19.7	610.0	13019016	25.6	985.0	13019017	24.4	870.0
35	7.0	2.5	14019015	20.7	725.0	14019016	26.6	1125.0	14019017	25.4	1000.0
50	8.4	2.5	15019015	22.1	875.0	15019016	27.9	1275.0	15019017	26.8	1160.0
70	10.0	2.5	16019015	23.7	1095.0	16019016	29.6	1535.0	16019017	28.4	1410.0
95	11.6	2.5	17019015	25.3	1375.0	17019016	31.5	1850.0	17019017	30.1	1705.0
120	13.0	2.5	18019015	26.8	1625.0	18019016	32.8	2130.0	18019017	31.5	1985.0
150	14.6	2.5	19019015	28.4	1920.0	19019016	34.7	2465.0	19019017	33.3	2300.0
185	16.2	2.5	20019015	30.0	2285.0	20019016	37.3	2980.0	20019017	35.2	2700.0
240	18.4	2.6	21019015	32.6	2885.0	21019016	39.7	3610.0	21019017	37.8	3335.0
300	20.6	2.8	22019015	35.5	3540.0	22019016	42.5	4310.0	22019017	40.6	4020.0
400	23.8	3.0	23019015	39.4	4430.0	23019016	46.6	5285.0	23019017	44.5	4950.0
500	26.6	3.2	24019015	42.8	5520.0	24019016	51.3	6655.0	24019017	48.1	6125.0
630	29.9	3.2	25019015	46.4	6940.0	25019016	55.1	8180.0	25019017	51.9	7605.0
800	34.1	3.2	26019015	51.0	8550.0	26019016	59.6	9860.0	26019017	56.4	9250.0
1000	37.8	3.2	27019015	55.0	10645.0	27019016	64.0	12115.0	27019017	60.7	11455.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

3.6/6(7.2)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/AWA/PVC-AT or AL/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	3.6/6(7.2)kV, 3.8/6.6(7.2)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	2.5	13019015A	19.7	455.0	13019016A	25.6	820.0	13019017A	24.4	710.0
35	7.0	2.5	14019015A	20.7	510.0	14019016A	26.6	895.0	14019017A	25.4	780.0
50	8.4	2.5	15019015A	22.1	585.0	15019016A	27.9	985.0	15019017A	26.8	870.0
70	10.0	2.5	16019015A	23.7	680.0	16019016A	29.6	1110.0	16019017A	28.4	985.0
95	11.6	2.5	17019015A	25.3	800.0	17019016A	31.5	1270.0	17019017A	30.1	1120.0
120	13.0	2.5	18019015A	26.8	900.0	18019016A	32.8	1400.0	18019017A	31.5	1255.0
150	14.6	2.5	19019015A	28.4	1020.0	19019016A	34.7	1560.0	19019017A	33.3	1395.0
185	16.2	2.5	20019015A	30.0	1170.0	20019016A	37.3	1850.0	20019017A	35.2	1580.0
240	18.4	2.6	21019015A	32.6	1415.0	21019016A	39.7	2125.0	21019017A	37.8	1855.0
300	20.6	2.8	22019015A	35.5	1690.0	22019016A	42.5	2460.0	22019017A	40.6	2165.0
400	23.8	3.0	23019015A	39.4	2050.0	23019016A	46.6	2925.0	23019017A	44.5	2580.0
500	26.6	3.2	24019015A	42.8	2480.0	24019016A	51.3	3625.0	24019017A	48.1	3080.0
630	29.9	3.2	25019015A	46.4	3010.0	25019016A	55.1	4255.0	25019017A	51.9	3670.0
800	34.1	3.2	26019015A	51.0	3620.0	26019016A	59.6	4935.0	26019017A	56.4	4315.0
1000	37.8	3.2	27019015A	55.0	4365.0	27019016A	64.0	5840.0	27019017A	60.7	5180.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

3.6/6(7.2)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/SWA/PVC-AT or CU/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	3.6/6(7.2)kV, 3.8/6.6(7.2)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	2.5	13039018	37.6	1810.0	13039006	44.7	3545.0	13039161	42.7	2700.0
35	7.0	2.5	14039018	40.1	2285.0	14039006	48.3	4450.0	14039161	45.3	3150.0
50	8.4	2.5	15039018	43.4	2660.0	15039006	51.6	5110.0	15039161	48.6	3700.0
70	10.0	2.5	16039018	47.0	3380.0	16039006	55.6	6060.0	16039161	52.5	4535.0
95	11.6	2.5	17039018	50.7	4290.0	17039006	59.2	7170.0	17039161	56.2	5515.0
120	13.0	2.5	18039018	54.0	5105.0	18039006	63.0	8230.0	18039161	59.9	6475.0
150	14.6	2.5	19039018	57.7	6050.0	19039006	67.0	9410.0	19039161	63.7	7540.0
185	16.2	2.5	20039018	61.5	7245.0	20039006	70.5	10800.0	20039161	67.5	8815.0
240	18.4	2.6	21039018	67.1	9140.0	21039006	76.3	13060.0	21039161	73.2	10900.0
300	20.6	2.8	22039018	73.1	11210.0	22039006	84.1	16485.0	22039161	79.5	13165.0
400	23.8	3.0	23039018	81.6	14065.0	23039006	93.0	20035.0	23039161	89.6	17170.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

3.6/6(7.2)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/SWA/PVC-AT or AL/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	3.6/6(7.2)kV, 3.8/6.6(7.2)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	2.5	13039018A	37.6	1340.0	13039006A	44.7	3065.0	13039163A	42.7	2220.0
35	7.0	2.5	14039018A	40.1	1535.0	14039006A	48.3	3795.0	14039131A	45.3	2500.0
50	8.4	2.5	15039018A	43.4	1795.0	15039006A	51.6	4235.0	15039163A	48.6	2830.0
70	10.0	2.5	16039018A	47.0	2140.0	16039006A	55.6	4790.0	16039163A	52.5	3285.0
95	11.6	2.5	17039018A	50.7	2545.0	17039006A	59.2	5435.0	17039163A	56.2	3780.0
120	13.0	2.5	18039018A	54.0	2915.0	18039006A	63.0	6045.0	18039163A	59.9	4290.0
150	14.6	2.5	19039018A	57.7	3355.0	19039006A	67.0	6700.0	19039163A	63.7	4845.0
185	16.2	2.5	20039018A	61.5	3860.0	20039006A	70.5	7405.0	20039163A	67.5	5445.0
240	18.4	2.6	21039018A	67.1	4700.0	21039006A	76.3	8610.0	21039163A	73.2	6450.0
300	20.6	2.8	22039018A	73.1	5620.0	22039006A	84.1	10900.0	22039163A	79.5	7585.0
400	23.8	3.0	23039018A	81.6	6925.0	23039006A	93.0	12885.0	23039163A	89.6	10025.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

6/10(12)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/AWA/PVC-AT or CU/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	6/10(12)kV, 6.35/11(12)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	3.4	13019020	21.3	675.0	13019030	27.2	1070.0	13019022	26.1	955.0
35	7.0	3.4	14019020	22.3	795.0	14019030	28.2	1200.0	14019022	27.1	1085.0
50	8.4	3.4	15019020	23.7	940.0	15019030	29.7	1370.0	15019022	28.5	1250.0
70	10.0	3.4	16019020	25.5	1175.0	16019030	31.4	1650.0	16019022	30.2	1495.0
95	11.6	3.4	17019020	27.0	1455.0	17019030	33.2	1955.0	17019022	32	1815.0
120	13.0	3.4	18019020	28.4	1700.0	18019030	35.4	2340.0	18019022	33.6	2100.0
150	14.6	3.4	19019020	30.0	1990.0	19019030	37.3	2690.0	19019022	35.2	2415.0
185	16.2	3.4	20019020	31.8	2380.0	20019030	38.9	3095.0	20019022	37.1	2830.0
240	18.4	3.4	21019020	34.3	2975.0	21019030	41.3	3730.0	21019022	39.3	3435.0
300	20.6	3.4	22019020	36.6	3585.0	22019030	43.7	4410.0	22019022	41.7	4100.0
400	23.8	3.4	23019020	40.2	4460.0	23019030	48.5	5520.0	23019022	45.4	5020.0
500	26.6	3.4	24019020	43.0	5520.0	24019030	51.5	6665.0	24019022	48.4	6140.0
630	29.9	3.4	25019020	46.8	6955.0	25019030	55.2	8190.0	25019022	52.1	7620.0
800	34.1	3.4	26019020	51.4	8580.0	26019030	60.0	9910.0	26019022	56.6	9275.0
1000	37.8	3.4	27019020	55.4	10680.0	27019030	64.2	12140.0	27019022	61.0	11490.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

6/10(12)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/AWA/PVC-AT or AL/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	6/10(12)kV, 6.35/11(12)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	3.4	13019020A	21.3	515.0	13019030A	27.2	910.0	13019022A	26.1	790.0
35	7.0	3.4	14019020A	22.3	575.0	14019030A	28.2	985.0	14019022A	27.1	865.0
50	8.4	3.4	15019020A	23.7	655.0	15019030A	29.7	1080.0	15019022A	28.5	955.0
70	10.0	3.4	16019020A	25.5	755.0	16019030A	31.4	1230.0	16019022A	30.2	1080.0
95	11.6	3.4	17019020A	27.0	880.0	17019030A	33.2	1380.0	17019022A	32	1230.0
120	13.0	3.4	18019020A	28.4	985.0	18019030A	35.4	1610.0	18019022A	33.6	1370.0
150	14.6	3.4	19019020A	30.0	1105.0	19019030A	37.3	1790.0	19019022A	35.2	1515.0
185	16.2	3.4	20019020A	31.8	1270.0	20019030A	38.9	1970.0	20019022A	37.1	1700.0
240	18.4	3.4	21019020A	34.3	1515.0	21019030A	41.3	2250.0	21019022A	39.3	1955.0
300	20.6	3.4	22019020A	36.6	1750.0	22019030A	43.7	2570.0	22019022A	41.7	2240.0
400	23.8	3.4	23019020A	40.2	2100.0	23019030A	48.5	3160.0	23019022A	45.4	2650.0
500	26.6	3.4	24019020A	43.0	2505.0	24019030A	51.5	3635.0	24019022A	48.4	3100.0
630	29.9	3.4	25019020A	46.8	3040.0	25019030A	55.2	4270.0	25019022A	52.1	3695.0
800	34.1	3.4	26019020A	51.4	3650.0	26019030A	60.0	4980.0	26019022A	56.6	4350.0
1000	37.8	3.4	27019020A	55.4	4400.0	27019030A	64.2	5860.0	27019022A	61.0	5210.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

6/10(12)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/SWA/PVC-AT or CU/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	6/10(12)kV, 6.35/11(12)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor			Insulation			Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight			
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)			
25	6.0	3.4	13039023	41.6	2045.0	13039009	50.0	4415.0	13039142	47.0	3055.0			
35	7.0	3.4	14039023	44.0	2435.0	14039009	52.4	4940.0	14039142	49.1	3480.0			
50	8.4	3.4	15039023	47.3	2915.0	15039009	56.0	5640.0	15039142	52.8	4095.0			
70	10.0	3.4	16039023	51.0	3670.0	16039009	60.0	6610.0	16039142	56.6	4965.0			
95	11.6	3.4	17039023	54.8	4610.0	17039009	63.5	7730.0	17039142	60.3	5970.0			
120	13.0	3.4	18039023	58.0	5445.0	18039009	67.0	8780.0	18039142	63.8	6915.0			
150	14.6	3.4	19039023	61.7	6400.0	19039009	70.6	9975.0	19039142	67.6	7975.0			
185	16.2	3.4	20039023	65.4	7620.0	20039009	74.7	11410.0	20039142	71.4	9315.0			
240	18.4	3.4	21039023	70.5	9475.0	21039009	81.5	14540.0	21039142	76.8	11370.0			
300	20.6	3.4	22039023	75.7	11475.0	22039009	86.7	16950.0	22039142	82.2	13545.0			
400	23.8	3.4	23039023	83.0	14215.0	23039009	94.4	20265.0	23039142	91.1	17380.0			

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

6/10(12)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/SWA/PVC-AT or AL/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	6/10(12)kV, 6.35/11(12)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	3.4	13039023A	41.6	1560.0	13039009A	50.0	3940.0	13039142A	47.0	2570.0
35	7.0	3.4	14039023A	44.0	1770.0	14039009A	52.4	4285.0	14039142A	49.1	2820.0
50	8.4	3.4	15039023A	47.3	2040.0	15039009A	56.0	4765.0	15039142A	52.8	3225.0
70	10.0	3.4	16039023A	51.0	2410.0	16039009A	60.0	5355.0	16039142A	56.6	3710.0
95	11.6	3.4	17039023A	54.8	2860.0	17039009A	63.5	5975.0	17039142A	60.3	4225.0
120	13.0	3.4	18039023A	58.0	3250.0	18039009A	67.0	6580.0	18039142A	63.8	4715.0
150	14.6	3.4	19039023A	61.7	3700.0	19039009A	70.6	7265.0	19039142A	67.6	5260.0
185	16.2	3.4	20039023A	65.4	4230.0	20039009A	74.7	8025.0	20039142A	71.4	5920.0
240	18.4	3.4	21039023A	70.5	5030.0	21039009A	81.5	10080.0	21039142A	76.8	6915.0
300	20.6	3.4	22039023A	75.7	5885.0	22039009A	86.7	11365.0	22039142A	82.2	7955.0
400	23.8	3.4	23039023A	83.0	7075.0	23039009A	94.4	13110.0	23039142A	91.1	10230.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

8.7/15(17.5)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/AWA/PVC-AT or CU/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	8.7/15(17.5)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	4.5	13019024	23.6	765.0	13019025	29.4	1190.0	13019026	28.3	1070.0
35	7.0	4.5	14019024	24.6	890.0	14019025	30.7	1345.0	14019026	29.4	1200.0
50	8.4	4.5	15019024	26.1	1040.0	15019025	32.1	1525.0	15019026	31.0	1380.0
70	10.0	4.5	16019024	27.7	1280.0	16019025	34.0	1805.0	16019026	32.6	1640.0
95	11.6	4.5	17019024	29.3	1565.0	17019025	36.6	2235.0	17019026	34.5	1965.0
120	13.0	4.5	18019024	30.9	1840.0	18019025	38.1	2525.0	18019026	35.8	2240.0
150	14.6	4.5	19019024	32.5	2140.0	19019025	39.6	2845.0	19019026	37.6	2575.0
185	16.2	4.5	20019024	34.5	2540.0	20019025	41.5	3290.0	20019026	39.3	2980.0
240	18.4	4.5	21019024	36.8	3135.0	21019025	44.0	3935.0	21019026	41.7	3610.0
300	20.6	4.5	22019024	39.1	3755.0	22019025	46.1	4605.0	22019026	44.1	4280.0
400	23.8	4.5	23019024	42.5	4625.0	23019025	51.0	5750.0	23019026	47.7	5215.0
500	26.6	4.5	24019024	45.6	5715.0	24019025	54.2	6945.0	24019026	51.0	6375.0
630	29.9	4.5	25019024	49.1	7140.0	25019025	57.7	8455.0	25019026	54.5	7860.0
800	34.1	4.5	26019024	54.0	8805.0	26019025	62.6	10190.0	26019026	59.3	9550.0
1000	37.8	4.5	27019024	57.9	10920.0	27019025	66.9	12475.0	27019026	63.7	11785.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

8.7/15(17.5)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/AWA/PVC-AT or AL/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	8.7/15(17.5)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor			Insulation			Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight			
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)			
25	6.0	4.5	13019024A	23.6	605.0	13019025A	29.4	1030.0	13019026A	28.3	905.0			
35	7.0	4.5	14019024A	24.6	665.0	14019025A	30.7	1125.0	14019026A	29.4	980.0			
50	8.4	4.5	15019024A	26.1	750.0	15019025A	32.1	1230.0	15019026A	31.0	1090.0			
70	10.0	4.5	16019024A	27.7	855.0	16019025A	34.0	1380.0	16019026A	32.6	1220.0			
95	11.6	4.5	17019024A	29.3	990.0	17019025A	36.6	1650.0	17019026A	34.5	1380.0			
120	13.0	4.5	18019024A	30.9	1110.0	18019025A	38.1	1790.0	18019026A	35.8	1510.0			
150	14.6	4.5	19019024A	32.5	1240.0	19019025A	39.6	1950.0	19019026A	37.6	1680.0			
185	16.2	4.5	20019024A	34.5	1410.0	20019025A	41.5	2160.0	20019026A	39.3	1855.0			
240	18.4	4.5	21019024A	36.8	1665.0	21019025A	44.0	2455.0	21019026A	41.7	2135.0			
300	20.6	4.5	22019024A	39.1	1910.0	22019025A	46.1	2745.0	22019026A	44.1	2425.0			
400	23.8	4.5	23019024A	42.5	2265.0	23019025A	51.0	3370.0	23019026A	47.7	2850.0			
500	26.6	4.5	24019024A	45.6	2680.0	24019025A	54.2	3900.0	24019026A	51.0	3335.0			
630	29.9	4.5	25019024A	49.1	3220.0	25019025A	57.7	4525.0	25019026A	54.5	3930.0			
800	34.1	3.4	26019024A	54.0	3870.0	26019025A	62.6	5265.0	26019026A	59.3	4625.0			
1000	37.8	3.4	27019024A	57.9	4635.0	27019025A	66.9	6195.0	27019026A	63.7	5500.0			

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

8.7/15(17.5)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/SWA/PVC-AT or CU/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	8.7/15(17.5)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor			Insulation			Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight			
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)			
25	6.0	4.5	13039027	46.8	2395.0	13039028	55.4	5045.0	13039029	52.1	3535.0			
35	7.0	4.5	14039027	49.3	2800.0	14039028	57.8	5600.0	14039029	54.4	3990.0			
50	8.4	4.5	15039027	52.6	3310.0	15039028	61.3	6315.0	15039029	58.0	4610.0			
70	10.0	4.5	16039027	56.2	4090.0	16039028	65.0	7280.0	16039029	61.7	5480.0			
95	11.6	4.5	17039027	60.0	5035.0	17039028	69.1	8525.0	17039029	65.8	6580.0			
120	13.0	4.5	18039027	63.3	5890.0	18039028	72.6	9565.0	18039029	69.3	7550.0			
150	14.6	4.5	19039027	66.9	6880.0	19039028	77.6	11665.0	19039029	73.0	8630.0			
185	16.2	4.5	20039027	70.6	8110.0	20039028	81.4	13175.0	20039029	76.9	10000.0			
240	18.4	4.5	21039027	75.7	10035.0	21039028	86.8	15510.0	21039029	82.3	12100.0			
300	20.6	4.5	22039027	80.9	12080.0	22039028	92.3	17960.0	22039029	88.9	15145.0			
400	23.8	4.5	23039027	88.3	14870.0	23039028	99.8	21340.0	23039029	96.5	18270.0			

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

8.7/15(17.5)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/SWA/PVC-AT or AL/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	8.7/15(17.5)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
25	6.0	4.5	13039027A	46.8	1910.0	13039028A	55.4	4565.0	13039029A	52.1	3050.0
35	7.0	4.5	14039027A	49.3	2140.0	14039028A	57.8	4935.0	14039029A	54.4	3335.0
50	8.4	4.5	15039027A	52.6	2440.0	15039028A	61.3	5445.0	15039029A	58.0	3740.0
70	10.0	4.5	16039027A	56.2	2830.0	16039028A	65.0	6030.0	16039029A	61.7	4220.0
95	11.6	4.5	17039027A	60.0	3285.0	17039028A	69.1	6780.0	17039029A	65.8	4835.0
120	13.0	4.5	18039027A	63.3	3690.0	18039028A	72.6	7370.0	18039029A	69.3	5355.0
150	14.6	4.5	19039027A	66.9	4160.0	19039028A	77.6	8960.0	19039029A	73.0	5925.0
185	16.2	4.5	20039027A	70.6	4730.0	20039028A	81.4	9780.0	20039029A	76.9	6620.0
240	18.4	4.5	21039027A	75.7	5585.0	21039028A	86.8	11055.0	21039029A	82.3	7650.0
300	20.6	4.5	22039027A	80.9	6490.0	22039028A	92.3	12365.0	22039029A	88.9	9565.0
400	23.8	4.5	23039027A	88.3	7730.0	23039028A	99.8	14195.0	23039029A	96.5	11130.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

12/20(24)kV Single-Core
XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/AWA/PVC-AT or CU/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	12/20(24)kV, 12.7/22(24)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
35	7.0	5.5	14019031	26.6	975.0	14019032	32.7	1475.0	14019033	31.5	1330.0
50	8.4	5.5	15019031	28.0	1130.0	15019032	34.4	1675.0	15019033	33.0	1500.0
70	10.0	5.5	16019031	29.7	1375.0	16019032	37.0	2045.0	16019033	34.8	1780.0
95	11.6	5.5	17019031	31.4	1680.0	17019032	38.7	2380.0	17019033	36.6	2115.0
120	13.0	5.5	18019031	33.0	1945.0	18019032	40.3	2690.0	18019033	38.0	2395.0
150	14.6	5.5	19019031	34.8	2270.0	19019032	41.9	3030.0	19019033	39.7	2720.0
185	16.2	5.5	20019031	36.4	2655.0	20019032	43.7	3470.0	20019033	41.5	3145.0
240	18.4	5.5	21019031	38.8	3260.0	21019032	46.0	4105.0	21019033	44.0	3790.0
300	20.6	5.5	22019031	41.2	3905.0	22019032	49.9	5005.0	22019033	46.6	4490.0
400	23.8	5.5	23019031	44.7	4795.0	23019032	53.2	5975.0	23019033	50.0	5420.0
500	26.6	5.5	24019031	47.8	5885.0	24019032	56.5	7180.0	24019033	53.3	6590.0
630	29.9	5.5	25019031	51.3	7330.0	25019032	60.2	8735.0	25019033	57.0	8110.0
800	34.1	5.5	26019031	56.0	8985.0	26019032	64.8	10465.0	26019033	61.6	9795.0
1000	37.8	5.5	27019031	60.2	11135.0	27019032	69.0	12730.0	27019033	65.8	12010.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

12/20(24)kV Single-Core
XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/AWA/PVC-AT or AL/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	12/20(24)kV, 12.7/22(24)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
35	7.0	5.5	14019031A	26.6	760.0	14019032A	32.7	1250.0	14019033A	31.5	1110.0
50	8.4	5.5	15019031A	28.0	845.0	15019032A	34.4	1380.0	15019033A	33.0	1210.0
70	10.0	5.5	16019031A	29.7	955.0	16019032A	37.0	1625.0	16019033A	34.8	1360.0
95	11.6	5.5	17019031A	31.4	1105.0	17019032A	38.7	1800.0	17019033A	36.6	1535.0
120	13.0	5.5	18019031A	33.0	1220.0	18019032A	40.3	1960.0	18019033A	38.0	1665.0
150	14.6	5.5	19019031A	34.8	1375.0	19019032A	41.9	2130.0	19019033A	39.7	1825.0
185	16.2	5.5	20019031A	36.4	1535.0	20019032A	43.7	2350.0	20019033A	41.5	2030.0
240	18.4	5.5	21019031A	38.8	1795.0	21019032A	46.0	2635.0	21019033A	44.0	2315.0
300	20.6	5.5	22019031A	41.2	2065.0	22019032A	49.9	3155.0	22019033A	46.6	2640.0
400	23.8	5.5	23019031A	44.7	2435.0	23019032A	53.2	3610.0	23019033A	50.0	3055.0
500	26.6	5.5	24019031A	47.8	2860.0	24019032A	56.5	4150.0	24019033A	53.3	3550.0
630	29.9	5.5	25019031A	51.3	3405.0	25019032A	60.2	4815.0	25019033A	57.0	4175.0
800	34.1	5.5	26019031A	56.0	4055.0	26019032A	64.8	5535.0	26019033A	61.6	4865.0
1000	37.8	5.5	27019031A	60.2	4855.0	27019032A	69.0	6450.0	27019033A	65.8	5725.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

12/20(24)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/SWA/PVC-AT or CU/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	12/20(24)kV, 12.7/22(24)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor			Insulation			Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight			
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)			
35	7.0	5.5	14039034	53.9	3140.0	14039036	62.8	6270.0	14039164	59.6	4505.0			
50	8.4	5.5	15039034	57.1	3670.0	15039036	66.4	6985.0	15039164	63.1	5150.0			
70	10.0	5.5	16039034	60.8	4470.0	16039036	70.0	8030.0	16039164	66.8	6045.0			
95	11.6	5.5	17039034	64.8	5475.0	17039036	73.9	9225.0	17039164	70.6	7140.0			
120	13.0	5.5	18039034	68.1	6350.0	18039036	79.0	11255.0	18039164	74.1	8135.0			
150	14.6	5.5	19039034	71.7	7365.0	19039036	82.6	12500.0	19039164	77.9	9245.0			
185	16.2	5.5	20039034	75.4	8630.0	20039036	86.5	14090.0	20039164	81.9	10680.0			
240	18.4	5.5	21039034	80.6	10590.0	21039036	91.9	16470.0	21039164	88.6	13645.0			
300	20.6	5.5	22039034	85.5	12625.0	22039036	97.2	18920.0	22039164	93.8	15915.0			
400	23.8	5.5	23039034	92.9	15460.0	23039036	104.9	22300.0	23039164	101.6	19130.0			

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

12/20(24)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/SWA/PVC-AT or AL/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	12/20(24)kV, 12.7/22(24)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
35	7.0	5.5	14039034A	53.9	2480.0	14039036A	62.8	5620.0	14039044A	59.6	3850.0
50	8.4	5.5	15039034A	57.1	2790.0	15039036A	66.4	6115.0	15039044A	63.1	4280.0
70	10.0	5.5	16039034A	60.8	3215.0	16039036A	70.0	6770.0	16039044A	66.8	4785.0
95	11.6	5.5	17039034A	64.8	3720.0	17039036A	73.9	7470.0	17039044A	70.6	5390.0
120	13.0	5.5	18039034A	68.1	4155.0	18039036A	79.0	9060.0	18039044A	74.1	5945.0
150	14.6	5.5	19039034A	71.7	4650.0	19039036A	82.6	9800.0	19039044A	77.9	6540.0
185	16.2	5.5	20039034A	75.4	5240.0	20039036A	86.5	10710.0	20039044A	81.9	7290.0
240	18.4	5.5	21039034A	80.6	6130.0	21039036A	91.9	12025.0	21039044A	88.6	9190.0
300	20.6	5.5	22039034A	85.5	7035.0	22039036A	97.2	13330.0	22039044A	93.8	10330.0
400	23.8	5.5	23039034A	92.9	8320.0	23039036A	104.9	15185.0	23039044A	101.6	11990.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

18/30(36)kV Single-Core
XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/AWA/PVC-AT or CU/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	18/30(36)kV, 19/33(36)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
50	8.4	8.0	15019038	33.4	1420.0	15019039	40.7	2150.0	15019040	38.5	1860.0
70	10.0	8.0	16019038	35.2	1675.0	16019039	42.3	2445.0	16019040	40.3	2155.0
95	11.6	8.0	17019038	37.1	2005.0	17019039	44.1	2805.0	17019040	42.0	2485.0
120	13.0	8.0	18019038	38.4	2275.0	18019039	45.5	3110.0	18019040	43.6	2800.0
150	14.6	8.0	19019038	40.3	2615.0	19019039	48.5	3670.0	19019040	45.4	3160.0
185	16.2	8.0	20019038	41.9	3010.0	20019039	50.4	4135.0	20019040	47.2	3605.0
240	18.4	8.0	21019038	44.4	3650.0	21019039	52.9	4810.0	21019040	49.6	4270.0
300	20.6	8.0	22019038	46.8	4320.0	22019039	55.3	5545.0	22019040	52.0	4970.0
400	23.8	8.0	23019038	50.2	5230.0	23019039	58.9	6570.0	23019040	55.5	5930.0
500	26.6	8.0	24019038	53.3	6355.0	24019039	62.0	7775.0	24019040	58.7	7120.0
630	29.9	8.0	25019038	56.8	7825.0	25019039	66.0	9390.0	25019040	62.7	8705.0
800	34.1	8.0	26019038	61.5	9520.0	26019039	70.6	11170.0	26019040	67.3	10440.0
1000	37.8	8.0	27019038	65.4	11675.0	27019039	74.7	13455.0	27019040	71.4	12690.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

18/30(36)kV Single-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/AWA/PVC-AT or AL/XLPE/CTS/PVC/DATA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	18/30(36)kV, 19/33(36)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, aluminium wires or double aluminium tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor		Insulation	Unarmoured			AWA Armoured			DATA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)
50	8.4	8.0	15019038A	33.4	1140.0	15019039A	40.7	1860.0	15019040A	38.5	1570.0
70	10.0	8.0	16019038A	35.2	1265.0	16019039A	42.3	2025.0	16019040A	40.3	1735.0
95	11.6	8.0	17019038A	37.1	1430.0	17019039A	44.1	2225.0	17019040A	42.0	1900.0
120	13.0	8.0	18019038A	38.4	1555.0	18019039A	45.5	2380.0	18019040A	43.6	2070.0
150	14.6	8.0	19019038A	40.3	1725.0	19019039A	48.5	2765.0	19019040A	45.4	2260.0
185	16.2	8.0	20019038A	41.9	1900.0	20019039A	50.4	3005.0	20019040A	47.2	2475.0
240	18.4	8.0	21019038A	44.4	2185.0	21019039A	52.9	3335.0	21019040A	49.6	2790.0
300	20.6	8.0	22019038A	46.8	2475.0	22019039A	55.3	3685.0	22019040A	52.0	3115.0
400	23.8	8.0	23019038A	50.2	2870.0	23019039A	58.9	4195.0	23019040A	55.5	3555.0
500	26.6	8.0	24019038A	53.3	3330.0	24019039A	62.0	4735.0	24019040A	58.7	4085.0
630	29.9	8.0	25019038A	56.8	3905.0	25019039A	66.0	5470.0	25019040A	62.7	4770.0
800	34.1	8.0	26019038A	61.5	4590.0	26019039A	70.6	6240.0	26019040A	67.3	5510.0
1000	37.8	8.0	27019038A	65.4	5395.0	27019039A	74.7	7185.0	27019040A	71.4	6410.0

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

18/30(36)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: CU/XLPE/CTS/PVC or CU/XLPE/CTS/PVC/SWA/PVC-AT or CU/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	18/30(36)kV, 19/33(36)kV
Construction :	Circular compacted stranded copper conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor			Insulation			Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight			
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)			
50	8.4	8.0	15039012	68.9	4750.0	15039041	79.8	9735.0	15039043	75.2	6600.0			
70	10.0	8.0	16039012	72.6	5610.0	16039041	83.5	10825.0	16039043	78.8	7550.0			
95	11.6	8.0	17039012	76.3	6640.0	17039041	87.7	12220.0	17039043	82.7	8715.0			
120	13.0	8.0	18039012	79.8	7605.0	18039041	91.0	13420.0	18039043	87.6	10625.0			
150	14.6	8.0	19039012	83.5	8675.0	19039041	94.8	14720.0	19039043	91.4	11835.0			
185	16.2	8.0	20039012	87.1	9995.0	20039041	98.7	16385.0	20039043	95.2	13345.0			
240	18.4	8.0	21039012	92.2	12000.0	21039041	104.1	18855.0	21039043	100.6	15630.0			
300	20.6	8.0	22039012	97.3	14150.0	22039041	109.3	21330.0	22039043	106.0	17995.0			
400	23.8	8.0	23039012	104.7	17110.0	23039041	117.0	24940.0	23039043	113.7	21350.0			

*MDPE, LSZH sheath is available if required.

Medium Voltage Cables

18/30(36)kV 3-Core

XLPE Insulated, Unarmoured & Armoured, PVC Sheathed Cable

Description: AL/XLPE/CTS/PVC or AL/XLPE/CTS/PVC/SWA/PVC-AT or AL/XLPE/CTS/PVC/DSTA/PVC-AT



Application :	This is an electric power distribution network cable typically used as primary supply to commercial, industrial and urban residential networks
Voltage rating :	18/30(36)kV, 19/33(36)kV
Construction :	Circular compacted stranded aluminium conductor, cross linked semi-conducting compound, XLPE insulated, cross linked semi-conducting compound bonded or strippable screened, plain annealed copper tape screen, galvanised steel wires or double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Specification :	IEC60502-2, BS6622
Operating temperature:	90°C

Conductor			Insulation			Unarmoured			SWA Armoured			DSTA Armoured		
Nominal Area	Approx. Diam.	Thickness	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight	Part No.	Approx. Overall Diam.	Approx. Weight			
(mm ²)	(mm)	(mm)		(mm)	(kg/km)		(mm)	(kg/km)		(mm)	(kg/km)			
50	8.4	8.0	15039012A	68.9	3900.0	15039041A	79.8	8855.0	15039043A	75.2	5720.0			
70	10.0	8.0	16039012A	72.6	4350.0	16039041A	83.5	9560.0	16039043A	78.8	6295.0			
95	11.6	8.0	17039012A	76.3	4890.0	17039041A	87.7	10465.0	17039043A	82.7	6970.0			
120	13.0	8.0	18039012A	79.8	5405.0	18039041A	91.0	11225.0	18039043A	87.6	8435.0			
150	14.6	8.0	19039012A	83.5	5965.0	19039041A	94.8	12010.0	19039043A	91.4	9130.0			
185	16.2	8.0	20039012A	87.1	6610.0	20039041A	98.7	13000.0	20039043A	95.2	9960.0			
240	18.4	8.0	21039012A	92.2	7510.0	21039041A	104.1	14400.0	21039043A	100.6	11175.0			
300	20.6	8.0	22039012A	97.3	8565.0	22039041A	109.3	15745.0	22039043A	106.0	12395.0			
400	23.8	8.0	23039012A	104.7	9955.0	23039041A	117.0	17800.0	23039043A	113.7	14200.0			

*MDPE, LSZH sheath is available if required.



Pilot Cables

1	Conductor	Solid plain annealed copper
2	Insulation	PE
3	Insulation	XLPE
4	Binder tape	Non-hygroscopic tape
5	Metallic screen	Copper tape
6	Bedding	PE*
7	Bedding	PVC*
8	SWA	Galvanized steel wire**
9	DSTA	Galvanized steel tape***
10	Outer sheath	PVC*

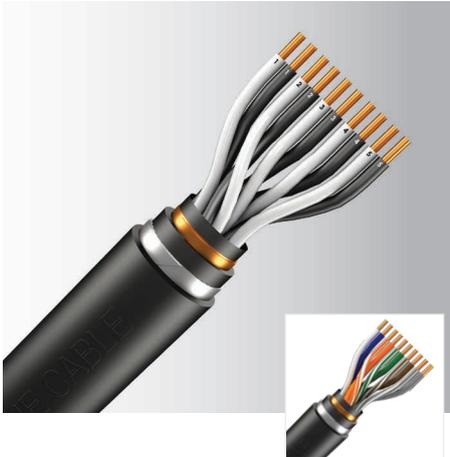
*MDPE, LSZH material is available if required

**AWA: Aluminium wire for single-core cable

***DATA: Double aluminium tape for single-core cable

Pilot Cables

0.6/1(1.2)kV Multi-Pair
 PE Insulated, Armoured, PVC Sheathed Cable
 Description: CU/PE/CTS/PE/DSTA/PVC-AT



Application :	Pilot cables associated with power distribution and transmission system are used for control, protection, signaling, speech and data transmission purposes. Such systems are mainly operated by the electricity providers
Voltage rating :	0.6/1(1.2)KV 15KV (Max. induced voltage)
Construction :	Annealed plain copper solid (Class 1) conductor, solid polyethylene insulated, twisted pairs, non-hygroscopic and non-wicking dielectric material and polyethylene tape applied over the cable assembly, copper tape screened, polyethylene bedding, double steel tape armoured and extruded PVC or anti-termite PVC compound sheath
Insulation colour:	Black, White with numbering (For colour coded cables, please refer to table 32 on page 48)
Specification :	IEC60502-1
Operating temperature:	70°C

Part No.		Nominal Cross Sectional Area	No. of Pairs	Approx. Conductor Diam.	Nominal Insulation Thickness	Nom. Thickness of Steel Tape	Approx. Overall Diameter of Cable	Approx. Weight of Cable
Black/White	Colour Code	mm ²	No.	mm	mm	mm	mm	kg/km
735P5001	735P5002	1.5	5	1.38	0.8	0.2	23.8	715.0
730P5001	730P5002		10	1.38	0.8	0.2	30.5	1105.0
73EP5001	73EP5002		15	1.38	0.8	0.2	34.6	1430.0
73KP5001	73KP5002		20	1.38	0.8	0.2	38.0	1740.0
745P5001	745P5002	2.5	5	1.78	0.8	0.2	25.6	865.0
740P5001	740P5002		10	1.78	0.8	0.2	33.5	1400.0
74EP5001	74EP5002		15	1.78	0.8	0.2	37.9	1845.0
74KP5001	74KP5002		20	1.78	0.8	0.5	42.9	2655.0

Related Test Requirement:

Conductor Cross Sectional Area	Max. Conductor Resistance* at 20°C	Min. Insulation Resistance	Max. Mutual Capacitance	Max. Capacitance Unbalance	High Voltage Test for 1 min
mm ²	Ω/km	MΩ•km	nF/km	pF/500m	kV(AC)
1.5	12.3	5000	150	500	10
2.5	7.56	5000	150	500	10

*Note : For multi-pair cables, the maximum D.C. resistance shall be increased by 2%.

Pilot Cables (Customized Alternatives)

0.6/1(1.2)kV Multi-Pair

XLPE Insulated, Armoured, PVC Sheathed Cable

Description: CU/XLPE/PVC/SWA/PVC-AT

Model code: XPSP-AT



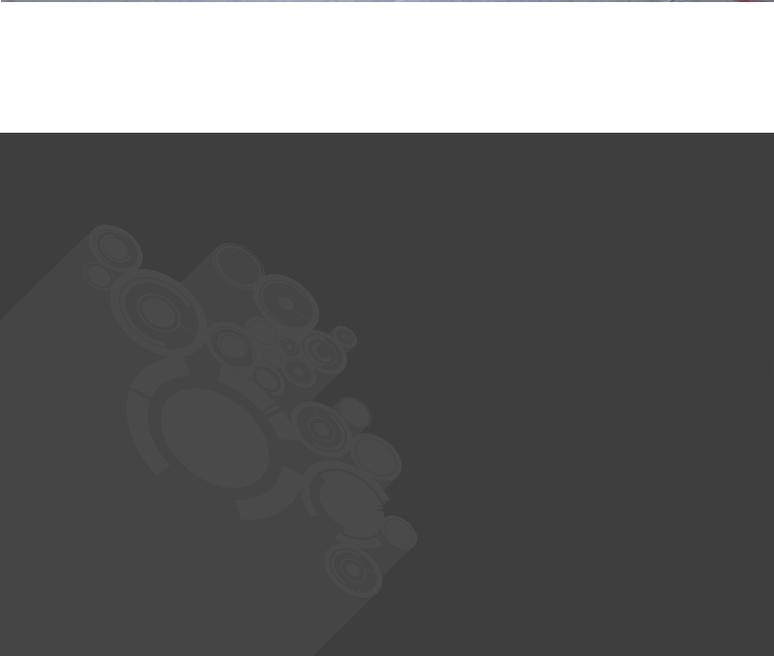
Application :	Pilot cables associated with power distribution and transmission system are used for control, protection, signaling, speech and data transmission purposes. Such systems are mainly operated by the electricity companies
Voltage rating :	0.6/1(1.2)KV
Construction :	Annealed plain copper solid (Class 1) conductor, cross linked polyethylene(XLPE) insulated, twisted pairs, non-hygroscopic tape applied over the cable assembly, black PVC bedding, galvanised steel wires armoured and extruded PVC or anti-termite PVC compound sheath
Insulation colour:	Black, White with numbering (For colour coded cables, please refer to table 32 on page 48)
Specification :	IEC60502-1
Operating temperature:	90°C

Part No.	Nominal Cross Sectional Area	No. of Pairs	Approx. Conductor Diam.	Nominal Insulation Thickness	Nom. Diameter of Steel Wire	Approx. Overall Diameter of Cable	Approx. Weight of Cable
Black/White	mm ²	No.	mm	mm	mm	mm	kg/km
735P6423	1.5	5	1.38	0.7	1.25	22.4	875.0
730P6423		10	1.38	0.7	1.6	29.3	1475.0
273EP6423		15	1.38	0.7	1.6	32.9	1820.0
73KP6423		20	1.38	0.7	2.0	36.8	2430.0
745P6423		5	1.78	0.7	1.25	24.3	1040.0
740P6423	2.5	10	1.78	0.7	1.6	32.2	1820.0
74EP6423		15	1.78	0.7	2.0	37.0	2550.0
74KP6423		20	1.78	0.7	2.0	41.1	3100.0

Related Test Requirement:

Conductor Cross Sectional Area	Max. Conductor Resistance* at 20°C	Min. Insulation Resistance	Max. Mutual Capacitance	Max. Capacitance Unbalance	High Voltage Test for 5min
mm ²	Ω/km	MΩ•km	nF/km	pF/500m	kV(AC)
1.5	12.3	1000	150	500	3.5
2.5	7.56	1000	150	500	3.5

*Note : For multi-pair cables, the maximum D.C. resistance shall be increased by 2%.



Technical Information

Table 1: Method of Installation

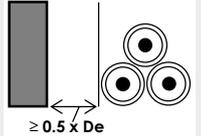
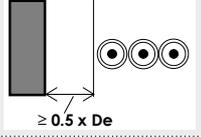
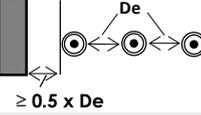
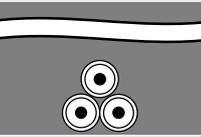
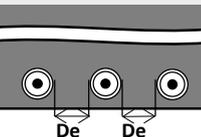
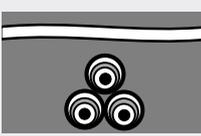
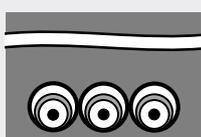
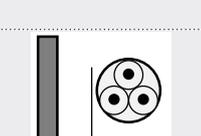
Installation Method	Examples	Remarks
1. Single-core cable in air (The cables are assumed to be spaced at least $0.5 \times D_e$ from any vertical surface and installed on brackets or ladder racks)		
a) Three single-core cables in trefoil formation touching throughout their length		
b) Three single-core cables in horizontal flat formation touching throughout their length		Where D_e is the external diameter of the cable
c) Three single-core cables in horizontal flat formation with a spacing of one cable diameter, D_e		
2. Single-core cable buried direct (Cables buried direct in the ground at a depth of 0.8m, soil thermal resistivity of $1.5 \text{ K} \cdot \text{m}/\text{W}$, ground temperature 20°C)		
a) Three single-core cables in trefoil formation touching throughout their length		
b) Three single-core cables in horizontal flat formation with a spacing of one cable diameter, D_e		Where D_e is the external diameter of the cable
3. Single-core cables in earthenware ducts Cable in earthenware ducts buried at a depth of 0.8m with one cable per duct, The earthenware duct having an inside diameter of $1.5 \times D_e$ and with a wall thickness equal to 6% of the duct inside diameter.		
a) Three single-core cables in trefoil ducts touching throughout their length		
b) Three single-core cables in horizontal flat formation, ducts touching throughout their length		
4. Three-core cables a) One three-cores cable in air spaced at least $0.3 \times D_e$ from any vertical surface		Where D_e is the external diameter of the cable

Table 1: Method of Installation

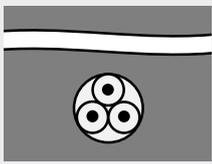
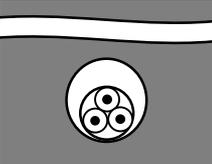
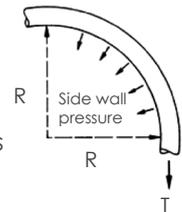
Installation Method	Examples	Remarks
b) One three-core cable buried direct in the ground at a depth of 0.8m		Where D_e is the external diameter of the cable
c) One three-core cable in a buried earthenware duct having an inside diameter of $1.5 \times D_e$ and with a wall thickness equal to 6% of the duct inside diameter. The depth of burial of duct is 0.8m		

Table 2: Recommended Minimum Bending Radius

To install the cables safely without damaging the electrical and physical properties of the cables, the tabulated values (shown below) represent the permanent minimum bending radius the cables withstand in fixed installation and on dispatching reels. Other constraints may impose a greater bending radius.



Type of cable	Cables on drum	Cables during installation	Cables placed into position adjacent to joint or termination with former
Armoured single-core	8D	15D	12D
Unarmoured single-core	10D	20D	15D
Armoured multi-core	8D	12D	10D
Unarmoured multi-core	10D	15D	12D

*Note: D means the oversall diameter of cable (mm)

Table 3: Permissible Maximum Pulling Tension of Medium Voltage Cable

With pulling eye on conductor

Material	Maximum safe tensile stress (S)
	(N/mm ²)
Stranded copper conductor	70
Stranded aluminium conductor	50
Solid aluminium conductor	30

With pulling eye on armour

Material	Maximum safe tensile stress (S)
	(N/mm ²)
Galvanized steel wire armour	100
Hard drawn aluminium wire armour	60

Table 4 : Technical Properties to IEC60502-2

Item No.	Technical Properties	Rated Voltage (kV)					
		U_m	7.2	12	17.5	24	36
		U_0/U (IEC 60502-2)	3.6/6	6/10	8.7/15	12/20	18/30
1	Max. Conductor D.C. resistance at 20°C (Ω/km)		See table				
2	Routine partial discharge test		The magnitude of discharge shall not exceed 10 pc at the test voltage, raised gradually to and held at $2 U_0$ for 10 s and then slowly reduced to $1.73 U_0$.				
3	Routine A.C. high voltage test (kV/min)	No breakdown of the insulation shall occur	12.5/5	21/5	30.5/5	42/5	63/5
4	A.C. Voltage test for 4h (kV) Note: applicable for rated voltage above 6/10(12)kV	No breakdown of the insulation shall occur	-	24	35	48	72
5	Hot set test	Maximum elongation under load (%)	175				
6		Maximum permanent elongation after cooling (%)	15				
7	Shrinkage test	Maximum shrinkage (%)	4				
8	Impulse test followed by a voltage test (kV)	No breakdown of the insulation shall occur	60	75	95	125	170
9	Other tests		Reference to IEC 60502-2, including raw materials and finished cables				

Table 5: Maximum Resistance and Short-Circuit Current of Cu and Al Conductor

Nominal Area (mm ²)	Copper conductor			Aluminium conductor		
	D.C. resistance @ 20°C (Ω/km)	A.C. resistance @ 90°C (Ω/km)	Short-circuit current for 1s (kA)	D.C. resistance @ 20°C (Ω/km)	A.C. resistance @ 90°C (Ω/km)	Short-circuit current for 1s (kA)
25	0.727	0.927	3.575	1.20	1.539	2.350
35	0.524	0.668	5.005	0.868	1.113	3.290
50	0.387	0.494	7.150	0.641	0.822	4.700
70	0.268	0.342	10.010	0.443	0.568	6.580
95	0.193	0.247	13.585	0.320	0.411	8.930
120	0.153	0.196	17.160	0.253	0.325	11.280
150	0.124	0.159	21.450	0.206	0.265	14.100
185	0.0991	0.128	26.455	0.164	0.211	17.390
240	0.0754	0.0977	34.320	0.125	0.161	22.560
300	0.0601	0.0787	42.900	0.100	0.130	28.200
400	0.0470	0.0627	57.200	0.0778	0.102	37.600
500	0.0366	0.0502	71.500	0.0605	0.080	47.000
630	0.0283	0.0407	90.090	0.0469	0.063	59.220
800	0.0221	0.0340	114.400	0.0367	0.051	75.200
1000	0.0176	0.0293	143.000	0.0291	0.042	94.000

*Note: Short-circuit current in Kiloampere, are approximate values under non-adiabatic conditions.

Table 6: Maximum Permissible Short-Circuit Current of Copper Tape Screen for Unarmoured Single-core Cable

The following short-circuit current in Kiloampere, are approximate values, calculated with copper tape screen of 0.12mm thickness applied helically with about 15% overlapping under non-adiabatic conditions.

Nominal Area (mm ²)	Short-Circuit Current for 1 second				
	3.6/6 (7.2) kV 3.8/6.6 (7.2) kV (kA)	6/10 (12) kV 6.35/11 (12) kV (kA)	8.7/15 (17.5) kV (kA)	12/20 (24) kV 12.7/22 (24) kV (kA)	18/30 (36) kV 19/33 (36) kV (kA)
25	1.075	1.083	1.094		
35	1.074	1.082	1.092	1.096	
50	1.072	1.080	1.091	1.095	1.284
70	1.070	1.079	1.090	1.091	1.281
95	1.069	1.077	1.086	1.272	1.280
120	1.068	1.077	1.286	1.271	1.279
150	1.067	1.076	1.265	1.270	1.278
185	1.064	1.251	1.264	1.267	1.275
240	1.241	1.250	1.262	1.266	1.274
300	1.239	1.246	1.261	1.265	1.271
400	1.240	1.245	1.256	1.260	1.270
500	1.243	1.244	1.253	1.257	1.266
630	1.236	1.238	1.252	1.253	1.265
800	1.260	1.260	1.280	1.280	1.300
1000	1.260	1.260	1.270	1.280	1.290

Table 7: Reactance at 50 Hz for Single-core XLPE Insulated Cable

Nominal Area (mm ²)	Reactance (Approximate)				
	3.6/6 (7.2) kV 3.8/6.6 (7.2) kV	6/10 (12) kV 6.35/11 (12) kV	8.7/15 (17.5) kV	12/20 (24) kV 12.7/22 (24) kV	18/30 (36) kV 19/33 (36) kV
	(Ω/km)	(Ω/km)	(Ω/km)	(Ω/km)	(Ω/km)
25	0.142	0.147	0.153		
35	0.135	0.140	0.146	0.105	
50	0.122	0.133	0.139	0.143	0.154
70	0.111	0.124	0.129	0.135	0.144
95	0.109	0.117	0.122	0.128	0.137
120	0.105	0.113	0.118	0.123	0.131
150	0.103	0.110	0.114	0.119	0.127
185	0.100	0.106	0.110	0.116	0.124
240	0.097	0.101	0.105	0.111	0.118
300	0.095	0.099	0.102	0.106	0.114
400	0.093	0.095	0.098	0.102	0.109
500	0.091	0.093	0.096	0.099	0.106
630	0.088	0.089	0.092	0.096	0.102
800	0.095	0.087	0.090	0.091	0.097
1000	0.093	0.085	0.089	0.089	0.094

Table 8: Capacitance

Nominal Area (mm ²)	Capacitance per phase (Approximate)				
	3.6/6 (7.2) kV 3.8/6.6 (7.2) kV	6/10 (12) kV 6.35/11 (12) kV	8.7/15 (17.5) kV	12/20 (24) kV 12.7/22 (24) kV	18/30 (36) kV 19/33 (36) kV
	(μF/km)	(μF/km)	(μF/km)	(μF/km)	(μF/km)
25	0.2423	0.1922	0.1576		
35	0.2684	0.2116	0.1725	0.1502	
50	0.3022	0.2367	0.1917	0.1661	0.1363
70	0.3462	0.2693	0.2167	0.1868	0.1508
95	0.3875	0.2999	0.2400	0.2060	0.1643
120	0.4236	0.3266	0.2603	0.2228	0.1760
150	0.4647	0.3570	0.2834	0.2418	0.1893
185	0.5059	0.3873	0.3123	0.2656	0.2060
240	0.5430	0.4290	0.3439	0.2916	0.2207
300	0.5589	0.4706	0.3755	0.3175	0.2387
400	0.5940	0.5311	0.4213	0.3551	0.2648
500	0.6167	0.5839	0.4613	0.3880	0.2876
630	0.6848	0.6481	0.5099	0.4278	0.3151
800	0.7293	0.6908	0.5391	0.4528	0.3308
1000	0.7987	0.7562	0.5889	0.4937	0.3592

Table 9: Inductance for Single-core XLPE Insulated Cable

Nominal Area (mm ²)	Inductance (Approximate)				
	3.6/6 (7.2) kV 3.8/6.6 (7.2) kV	6/10 (12) kV 6.35/11 (12) kV	8.7/15 (17.5) kV	12/20 (24) kV 12.7/22 (24) kV	18/30 (36) kV 19/33 (36) kV
	(mH/km)	(mH/km)	(mH/km)	(mH/km)	(mH/km)
25	0.5954	0.6143	0.6474		
35	0.5753	0.5932	0.6248	0.6390	
50	0.5543	0.5711	0.6011	0.6145	0.6501
70	0.5357	0.5486	0.5765	0.5919	0.6252
95	0.5172	0.5318	0.5608	0.5726	0.6043
120	0.5059	0.5197	0.5473	0.5586	0.5891
150	0.4949	0.5079	0.5341	0.5449	0.5740
185	0.4885	0.5006	0.5252	0.5351	0.5640
240	0.4790	0.4890	0.5143	0.5216	0.5487
300	0.4749	0.4818	0.5032	0.5102	0.5376
400	0.4660	0.4702	0.4927	0.4991	0.5219
500	0.4600	0.4619	0.4848	0.4907	0.5128
630	0.4547	0.4563	0.4748	0.4827	0.5012
800	0.4149	0.4156	0.4237	0.4315	0.4505
1000	0.4092	0.4099	0.4175	0.4247	0.4430

Table 10: Inductance for Three-core XLPE Insulated Cable

Nominal Area (mm ²)	Inductance (Approximate)				
	3.6/6 (7.2) kV 3.8/6.6 (7.2) kV	6/10 (12) kV 6.35/11 (12) kV	8.7/15 (17.5) kV	12/20 (24) kV 12.7/22 (24) kV	18/30 (36) kV 19/33 (36) kV
	(kA)	(kA)	(kA)	(kA)	(kA)
25	0.3686	0.3932	0.4197		
35	0.3518	0.3748	0.3998	0.4201	
50	0.3358	0.3572	0.3805	0.3996	0.4432
70	0.3117	0.3313	0.3529	0.3708	0.4118
95	0.2980	0.3159	0.3359	0.3525	0.3910
120	0.2889	0.3057	0.3245	0.3401	0.3768
150	0.2808	0.2965	0.3142	0.3289	0.3638
185	0.2711	0.2858	0.3024	0.3163	0.3494
240	0.2635	0.2753	0.2905	0.3033	0.3440
300	0.2614	0.2695	0.2834	0.2953	0.3228
400	0.2556	0.2604	0.2733	0.2843	0.3100
500	0.2534	0.2556	0.2672	0.2772	0.3006

Table 11: Correction factors for ambient air temperature other than 30°C

Maximum conductor temperature °C	Ambient air temperature °C								
	20	25	30	35	40	45	50	55	60
90°C	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71

Table 12: Correction factors for ambient ground temperature other than 20°C

Maximum conductor temperature °C	Ambient ground temperature °C								
	10	15	20	25	30	35	40	45	50
90°C	1.07	1.04	1.00	0.96	0.93	0.89	0.85	0.80	0.76

Table 13: Correction factors for depths of laying other than 0.8m for direct buried cable

Depth of laying (m)	Single-core cables		
	Nominal conductor size		Three-core cables
	≤ 185mm ²	≥ 185mm ²	
0.5	1.04	1.06	1.04
0.6	1.02	1.04	1.03
0.8	1.00	1.00	1.00
1.0	0.98	0.97	0.98
1.25	0.96	0.96	0.96
1.5	0.95	0.93	0.95
1.75	0.94	0.91	0.94
2.0	0.93	0.90	0.93
2.5	0.91	0.88	0.91
3.0	0.90	0.86	0.90

Table 14: Correction factors for depths of laying other than 0.8m for cables in ducts

Depth of laying (m)	Single-core cables		
	Nominal conductor size		Three-core cables
	≤ 185mm ²	≥ 185mm ²	
0.5	1.04	1.05	1.03
0.6	1.02	1.03	1.02
0.8	1.00	1.00	1.00
1.0	0.98	0.97	0.99
1.25	0.96	0.95	0.97
1.5	0.95	0.93	0.96
1.75	0.94	0.92	0.95
2.0	0.93	0.91	0.94
2.5	0.91	0.89	0.93
3.0	0.90	0.88	0.92

Table 15: Correction factors for soil thermal resistivities other than 1.5 K · m/W for direct buried single-core cables

Nominal Area (mm ²)	Values of soil thermal resistivity K · m/W							
	0.7	0.8	0.9	1.0	1.5	2.0	2.5	3.0
16	1.29	1.24	1.19	1.15	1.00	0.89	0.82	0.75
25	1.30	1.25	1.20	1.16	1.00	0.89	0.81	0.75
35	1.30	1.25	1.21	1.16	1.00	0.89	0.81	0.75
50	1.32	1.26	1.21	1.16	1.00	0.89	0.81	0.74
70	1.33	1.27	1.22	1.17	1.00	0.89	0.81	0.74
95	1.34	1.28	1.22	1.18	1.00	0.89	0.80	0.74
120	1.34	1.28	1.22	1.18	1.00	0.88	0.80	0.74
150	1.35	1.28	1.23	1.18	1.00	0.88	0.80	0.74
185	1.35	1.29	1.23	1.18	1.00	0.88	0.80	0.74
240	1.36	1.29	1.23	1.18	1.00	0.88	0.80	0.73
300	1.36	1.30	1.24	1.19	1.00	0.88	0.80	0.73
400	1.37	1.30	1.24	1.19	1.00	0.88	0.79	0.73

Table 16: Correction factors for soil thermal resistivities other than 1.5 K · m/W for single-core cables in buried ducts

Nominal Area (mm ²)	Values of soil thermal resistivity K · m/W							
	0.7	0.8	0.9	1.0	1.5	2.0	2.5	3.0
16	1.20	1.17	1.14	1.11	1.00	0.92	0.85	0.79
25	1.21	1.17	1.14	1.12	1.00	0.91	0.85	0.79
35	1.21	1.18	1.15	1.12	1.00	0.91	0.84	0.79
50	1.21	1.18	1.15	1.12	1.00	0.91	0.84	0.78
70	1.22	1.19	1.15	1.12	1.00	0.91	0.84	0.78
95	1.23	1.19	1.16	1.13	1.00	0.91	0.84	0.78
120	1.23	1.20	1.16	1.13	1.00	0.91	0.84	0.78
150	1.24	1.20	1.16	1.13	1.00	0.91	0.83	0.78
185	1.24	1.20	1.17	1.13	1.00	0.91	0.83	0.78
240	1.25	1.21	1.17	1.14	1.00	0.90	0.83	0.77
300	1.25	1.21	1.17	1.14	1.00	0.90	0.83	0.77
400	1.25	1.21	1.17	1.14	1.00	0.90	0.83	0.77

Table 17: Correction factors for soil thermal resistivities other than 1.5 K · m/W for direct buried three-core cables

Nominal Area (mm ²)	Values of soil thermal resistivity K · m/W							
	0.7	0.8	0.9	1.0	1.5	2.0	2.5	3.0
16	1.23	1.19	1.16	1.13	1.00	0.91	0.84	0.78
25	1.24	1.20	1.16	1.13	1.00	0.91	0.84	0.78
35	1.25	1.21	1.17	1.13	1.00	0.91	0.83	0.78
50	1.25	1.21	1.17	1.14	1.00	0.91	0.83	0.77
70	1.26	1.21	1.18	1.14	1.00	0.90	0.83	0.77
95	1.26	1.22	1.18	1.14	1.00	0.90	0.83	0.77
120	1.26	1.22	1.18	1.14	1.00	0.90	0.83	0.77
150	1.27	1.22	1.18	1.15	1.00	0.90	0.83	0.77
185	1.27	1.23	1.18	1.15	1.00	0.90	0.83	0.77
240	1.28	1.23	1.18	1.15	1.00	0.90	0.83	0.77
300	1.28	1.23	1.19	1.15	1.00	0.90	0.82	0.77
400	1.28	1.23	1.19	1.15	1.00	0.90	0.82	0.76

Table 18: Correction factors for soil thermal resistivities other than 1.5 K · m/W for three-core cables in ducts

Nominal Area (mm ²)	Values of soil thermal resistivity K · m/W							
	0.7	0.8	0.9	1.0	1.5	2.0	2.5	3.0
16	1.12	1.11	1.09	1.08	1.00	0.94	0.89	0.84
25	1.14	1.12	1.10	1.08	1.00	0.94	0.89	0.84
35	1.14	1.12	1.10	1.08	1.00	0.94	0.88	0.84
50	1.14	1.12	1.10	1.08	1.00	0.94	0.88	0.84
70	1.15	1.13	1.11	1.09	1.00	0.94	0.88	0.83
95	1.15	1.13	1.11	1.09	1.00	0.94	0.88	0.83
120	1.15	1.13	1.11	1.09	1.00	0.93	0.88	0.83
150	1.15	1.13	1.11	1.09	1.00	0.93	0.88	0.83
185	1.16	1.14	1.11	1.09	1.00	0.93	0.87	0.83
240	1.16	1.14	1.12	1.10	1.00	0.93	0.87	0.82
300	1.17	1.14	1.12	1.10	1.00	0.93	0.87	0.82
400	1.17	1.14	1.12	1.10	1.00	0.92	0.86	0.81

Table 19: Correction factors for groups of the three-core cables in horizontal formation laid direct in the ground

No. of cables in group	Spacing between cable centres (mm)				
	Touching	200	400	600	800
2	0.80	0.86	0.90	0.92	0.94
3	0.69	0.77	0.82	0.86	0.89
4	0.62	0.72	0.79	0.83	0.87
5	0.57	0.68	0.76	0.81	0.85
6	0.54	0.65	0.74	0.80	0.84
7	0.51	0.63	0.72	0.78	0.83
8	0.49	0.61	0.71	0.78	-
9	0.47	0.60	0.70	0.77	-
10	0.46	0.59	0.69	-	-
11	0.45	0.57	0.69	-	-
12	0.43	0.56	0.68	-	-

Table 20: Correction factors for groups of the three-core cables in single way ducts in horizontal formation

No. of cables in group	Spacing between duct centres (mm)				
	Touching	200	400	600	800
2	0.85	0.88	0.92	0.94	0.95
3	0.75	0.80	0.85	0.88	0.91
4	0.69	0.75	0.82	0.86	0.89
5	0.65	0.72	0.79	0.84	0.87
6	0.62	0.69	0.77	0.83	0.87
7	0.59	0.69	0.76	0.82	0.86
8	0.57	0.65	0.75	0.81	-
9	0.55	0.64	0.74	0.80	-
10	0.54	0.63	0.73	-	-
11	0.52	0.62	0.73	-	-
12	0.51	0.61	0.72	-	-

Table 21: Correction factors for groups of the three-phase circuits of single-core cable laid direct in the ground

No. of cables in group	Spacing between cable centres (mm)				
	Touching	200	400	600	800
2	0.73	0.83	0.88	0.90	0.92
3	0.60	0.73	0.79	0.83	0.86
4	0.54	0.68	0.75	0.80	0.84
5	0.49	0.63	0.72	0.78	0.82
6	0.46	0.61	0.70	0.76	0.81
7	0.43	0.58	0.68	0.75	0.80
8	0.41	0.57	0.67	0.74	-
9	0.39	0.55	0.66	0.73	-
10	0.37	0.54	0.65	-	-
11	0.36	0.53	0.64	-	-
12	0.36	0.52	0.64	-	-

Table 22: Correction factors for groups of the three-phase circuits of single-core cable in single way ducts

No. of cables in group	Spacing between duct centres (mm)				
	Touching	200	400	600	800
2	0.78	0.85	0.89	0.91	0.93
3	0.66	0.75	0.81	0.85	0.88
4	0.69	0.70	0.77	0.82	0.86
5	0.55	0.66	0.74	0.80	0.84
6	0.51	0.64	0.72	0.78	0.83
7	0.48	0.61	0.71	0.77	0.82
8	0.46	0.60	0.70	0.76	-
9	0.44	0.58	0.69	0.76	-
10	0.43	0.57	0.68	-	-
11	0.42	0.56	0.67	-	-
12	0.40	0.55	0.67	-	-

Table 23: Reduction factors for groups of more than one three-core cable in air

To be applied to the current-carrying capacity for one three-core cable in free air

Method of installation		No. of tray	No. of cables					
			1	2	3	4	6	9
Cables on perforated trays	<p>Touching</p> <p>≥ 20 mm</p>	1	1.00	0.88	0.82	0.79	0.76	0.73
		2	1.00	0.87	0.80	0.77	0.73	0.68
		3	1.00	0.86	0.79	0.76	0.71	0.66
	<p>Spaced</p> <p>De</p> <p>≥ 20 mm</p>	1	1.00	1.00	0.98	0.95	0.91	-
		2	1.00	0.99	0.96	0.92	0.87	-
		3	1.00	0.98	0.95	0.91	0.85	-
Cables on vertical perforated trays	<p>Touching</p> <p>≥ 225 mm</p>	1	1.00	0.88	0.82	0.78	0.73	0.72
		2	1.00	0.88	0.81	0.76	0.71	0.7
	<p>Spaced</p> <p>De</p> <p>≥ 225 mm</p>	1	1.00	0.91	0.89	0.88	0.87	-
		2	1.00	0.91	0.88	0.87	0.85	-
Cables on ladder supports, cleats etc.	<p>Touching</p> <p>≥ 20 mm</p>	1	1.00	0.87	0.82	0.80	0.79	0.78
		2	1.00	0.88	0.80	0.78	0.76	0.73
		3	1.00	0.85	0.79	0.76	0.73	0.70
	<p>Spaced</p> <p>De</p> <p>≥ 20 mm</p>	1	1.00	1.00	1.00	1.00	1.00	-
		2	1.00	0.99	0.98	0.97	0.96	-
		3	1.00	0.98	0.97	0.96	0.93	-

*Note:

1. Values given are averages for the cable types and range of conductor sizes considered. The spread of values is generally less than 5%.
2. Factors apply to single layer groups of cables as shown above and do not apply when cables are installed in more than one layer touching each other. Values for such installation may be significantly lower and must be determined by an appropriate method.
3. Values are given for vertical spacings between trays of 300mm and at least 20mm between trays and wall. For closer spacing, the factors should be reduced.
4. Values are given for horizontal spacing between trays of 225mm with trays mounted back to back. For closer spacing, the factors should be reduced.

Table 24: Reduction factors for groups of more than one circuit of single-core cables (see note 2)

To be applied to the current-carrying capacity for one circuit of single-core cables in free air

Method of installation	No. of tray	No. of three-phase circuits (see note 5)			Use as a multiplier to rating for
		1	2	3	
Perforated trays (Note 3) 	1	0.98	0.91	0.87	Three cables in horizontal formation
	2	0.96	0.87	0.81	
	3	0.95	0.85	0.78	
Ladder supports cleats etc. (Note 3) 	1	1.00	0.97	0.96	Three cables in horizontal formation
	2	0.98	0.93	0.89	
	3	0.97	0.90	0.86	
Perforated trays (Note 3) 	1	1.00	0.98	0.96	
	2	0.97	0.93	0.89	
	3	0.96	0.92	0.86	
Vertical perforated trays (Note 4) 	1	1.00	0.91	0.89	Three cables in trefoil formation
	2	1.00	0.90	0.86	
Ladder supports cleats etc. (Note 3) 	1	1.00	1.00	1.00	
	2	0.97	0.95	0.93	
	3	0.96	0.94	0.90	

*Note:

1. Values given are averages for the cable types and range of conductor sizes considered. The spread of values is generally less than 5%.
2. Factors are given for single layers of cables (or trefoil groups) as shown in the table and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and should be determined by an appropriated method.
3. Values are given for vertical spacings between trays of 300mm. For closer spacing, the factors should be reduced.
4. Values are given for horizontal spacings between trays of 225mm with trays mounted back to back. For closer spacing, the factors should be reduced.
5. For circuits having more than one cable in parallel per phase, each three phase set of conductors should be considered as a circuit for the purpose of this table.

Table 25 : Single-core cables with copper conductor, XLPE insulation, 3.6/6kV to 18/30kV

Conductor Operating Temperature: 90°C
Ambient Temperature: 30°C
Ground Temperature: 20°C
Depth of Laying: 0.8m

IEC60502-2-2014
Thermal Resistivity of Soil: 1.5 K · m/W
Thermal Resistivity of Earthenware ducts: 1.2 K · m/W
Screens bonded at both ends

Nominal Area	Buried direct in the ground		In single-way ducts		In air		
	Trefoil	Flat spaced	Trefoil ducts	Flat touching ducts	Trefoil	Flat touching	Flat spaced
(mm ²)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
16	109	113	103	104	125	128	150
25	140	144	132	133	163	167	196
35	166	172	157	159	198	203	238
50	196	203	186	188	238	243	286
70	239	246	227	229	296	303	356
95	285	293	271	274	361	369	434
120	323	332	308	311	417	426	500
150	361	366	343	347	473	481	559
185	406	410	387	391	543	550	637
240	469	470	447	453	641	647	745
300	526	524	504	510	735	739	846
400	590	572	564	571	845	837	938
500	650	710	608	603	969	944	1003
630	730	790	676	668	1102	1070	1117
800	820	910	742	732	1226	1207	1240
1000	930	1030	799	786	1359	1328	1344

*Note : Current ratings table (calculated for cables having a rated voltage of 6/10 kV) as per IEC 60502-2:2014.

Table 26 : Single-core cables with aluminium conductor, XLPE insulation, 3.6/6kV to 18/30kV

Conductor Operating Temperature: 90°C
Ambient Temperature: 30°C
Ground Temperature: 20°C
Depth of Laying: 0.8m

IEC60502-2-2014
Thermal Resistivity of Soil: 1.5 K · m/W
Thermal Resistivity of Earthenware ducts: 1.2 K · m/W
Screens bonded at both ends

Nominal Area	Buried direct in the ground		In single-way ducts		In air		
	Trefoil	Flat spaced	Trefoil ducts	Flat touching ducts	Trefoil	Flat touching	Flat spaced
(mm ²)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
16	84	88	80	81	97	99	116
25	108	112	102	103	127	130	153
35	129	134	122	123	154	157	185
50	152	157	144	146	184	189	222
70	186	192	176	178	230	236	278
95	221	229	210	213	280	287	338
120	252	260	240	242	324	332	391
150	281	288	267	271	368	376	440
185	317	324	303	307	424	432	504
240	367	373	351	356	502	511	593
300	414	419	397	402	577	586	677
400	470	466	451	457	673	676	769
500	550	560	485	494	779	764	837
630	622	640	534	555	893	882	950
800	704	720	582	618	1017	1009	1070
1000	776	800	621	679	1150	1140	1193

*Note : Current ratings table (calculated for cables having a rated voltage of 6/10 kV) as per IEC 60502-2:2014.

Table 27 : Three-core cables with copper conductor, XLPE insulation, unarmoured and armoured, 3.6/6kV to 18/30kV

Conductor Operating Temperature: 90°C
Ambient Temperature: 30°C
Ground Temperature: 20°C
Depth of Laying: 0.8m

IEC60502-2-2014
Thermal Resistivity of Soil: 1.5 K · m/W
Thermal Resistivity of Earthenware ducts: 1.2 K · m/W
Screens bonded at both ends

Nominal Area (mm ²)	Unarmoured			Armoured		
	Buried direct in ground	Buried in a duct	in air	Buried direct in ground	Buried in a duct	in air
	(A)	(A)	(A)	(A)	(A)	(A)
16	101	87	109	101	88	110
25	129	112	142	129	112	143
35	153	133	170	154	134	172
50	181	158	204	181	158	205
70	221	193	253	220	198	253
95	262	231	304	263	232	307
120	298	264	351	298	264	352
150	334	297	398	332	296	397
185	377	336	455	374	335	453
240	434	390	531	431	387	529
300	489	441	606	482	435	599
400	553	501	696	541	492	683

*Note : Current ratings table (calculated for cables having a rated voltage of 6/10 kV) as per IEC 60502-2:2014.

Table 28 : Three-core cables with aluminium conductor, XLPE insulation, unarmoured and armoured, 3.6/6kV to 18/30kV

Conductor Operating Temperature: 90°C
Ambient Temperature: 30°C
Ground Temperature: 20°C
Depth of Laying: 0.8m

IEC60502-2-2014
Thermal Resistivity of Soil: 1.5 K · m/W
Thermal Resistivity of Earthenware ducts: 1.2 K · m/W
Screens bonded at both ends

Nominal Area (mm ²)	Unarmoured			Armoured		
	Buried direct in ground	Buried in a duct	in air	Buried direct in ground	Buried in a duct	in air
	(A)	(A)	(A)	(A)	(A)	(A)
16	78	67	84	78	68	85
25	100	87	110	100	87	111
35	119	103	132	119	104	133
50	140	122	158	140	123	159
70	171	150	196	171	150	196
95	203	179	236	204	180	238
120	232	205	273	232	206	274
150	260	231	309	259	231	309
185	294	262	355	293	262	354
240	340	305	415	338	304	415
300	384	346	475	380	343	472
400	438	398	552	432	393	545

*Note : Current ratings table (calculated for cables having a rated voltage of 6/10 kV) as per IEC 60502-2:2014.

XLPE Insulation Thickness (UL 1072) & Wire Gauge Conversion



tel (65) 6367 0107 fax (65) 6365 2963
www.keystone-cable.com

Table 29 : XLPE insulation thickness for shielded single and multiple conductor cable

Voltage rating	Conductor size	Conductor size	Insulation thickness (mm)					
			100% level		133% level		173% level	
(V)	(AWG or kcmil)	(mm ²)	Minimum at any point	Maximum at any point	Minimum at any point	Maximum at any point	Minimum at any point	Maximum at any point
5000	1	8.37-506.7	2.16	3.05	2.16	3.05	3.43	4.32
	1001-2000	506.8-1013.4	3.43	4.32	3.43	4.32	3.43	4.32
5001-8000	6-1000	13.3-506.7	2.79	3.68	3.43	4.32	4.19	5.21
	1001-2000	506.8-1013.4	4.19	5.21	4.19	5.21	5.33	6.35
8001-15000	2-1000	33.6-506.7	4.19	5.21	5.33	6.35	6.22	7.37
	1001-2000	506.8-1013.4	5.33	6.35	5.33	6.35	6.22	7.37
150001-25000	1-2000	42.4-1013.4	6.22	7.37	7.75	8.89	10.2	11.4
250001-28000	1-2000	42.4-1013.4	6.73	7.87	8.38	9.53	10.8	12.1
280001-35000	1/0-2000	53.5-1013.4	8.38	9.53	10.2	11.4	14.1	15.5

Table 30 : XLPE insulation thickness for shielded single and multiple conductor cable

U.S. Standard	Equivalent IEC cross-section area	Nearest available IEC cross-section area	U.S. Standard	Equivalent IEC cross-section area	Nearest available IEC cross-section area
(AWG or kcmil)	(mm ²)	(mm ²)	(AWG or kcmil)	(mm ²)	(mm ²)
20 AWG	0.519	0.5-0.75	350 kcmil	177.3	185
18 AWG	0.823	1	400 kcmil	202.7	185
16 AWG	1.31	1.5	450 kcmil	228.0	185-240
14 AWG	2.08	2.5	500 kcmil	253.4	240
12 AWG	3.31	4	550 kcmil	278.7	240-300
10 AWG	5.26	6	600 kcmil	304.0	300
8 AWG	8.37	10	650 kcmil	329.4	300
6 AWG	13.3	16	700 kcmil	354.7	300-400
4 AWG	21.2	25	750 kcmil	380.0	400
2 AWG	33.6	35	800 kcmil	405.4	400
1 AWG	42.4	50	850 kcmil	430.7	400
1/0 kcmil	53.5	70	900 kcmil	456.0	400
2/0 kcmil	67.2	70	950 kcmil	481.4	400
3/0 kcmil	85.0	95	1000 kcmil	506.7	400-630
4/0 kcmil	107.2	120	1250 kcmil	633.4	630
250 kcmil	126.7	120-150	1500 kcmil	760.0	800
300 kcmil	152.0	150	1750 kcmil	886.7	800-1000
			2000 kcmil	1013.4	1000

Table 31: Recommended ordering parameters

In order to respond to your requirement promptly, please provide the following information in your request for quotation:

No,	Information
1	International or Special Standard (Alternatively, please provide the precise use of the cable for our technical team to make the recommendation)
2	Rated voltage
3	Copper or aluminium conductors
4	Size of each conductor
5	Insulation material: XLPE or others
6	Number and identification of conductors
7	Armour type
8	Packing
9	Required delivery time
10	Required validity

Table 32: Identification of pairs for pilot cable

Pair	A - wire	B - wire	Pair	A - wire	B - wire
1	White	Blue	11	Black	Blue/black stripe
2	White/orange stripe	Orange	12	Black/orange stripe	Orange/black stripe
3	White/green stripe	Green	13	Black/green stripe	Green/black stripe
4	White/brown stripe	Brown	14	Black/brown stripe	Brown/black stripe
5	White/grey stripe	Grey	15	Black/grey stripe	Grey/black stripe
6	Red	Blue/red stripe	16	Yellow	Blue/yellow stripe
7	Red/orange stripe	Orange/red stripe	17	Yellow/orange stripe	Orange/yellow stripe
8	Red/green stripe	Green/red stripe	18	Yellow/green stripe	Green/yellow stripe
9	Red/brown stripe	Brown/red stripe	19	Yellow/brown stripe	Brown/yellow stripe
10	Red/grey stripe	Grey/red stripe	20	Yellow/grey stripe	Grey/yellow stripe



KEYSTONE
CABLE

KEYSTONE CABLE (S) PTE LTD
57 Senoko Drive, Singapore 758236

Tel (65) 6367 0107
Fax (65) 6365 2963
Email sales@keystone-cable.com
Website www.keystone-cable.com